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10/722,348

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Hui Cheng

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EXAMINER

SMITH, JEFFREY S

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

08/10/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/722,348

Applicant(s)

CHENG ET AL.

Examiner

Jeffrey S. Smith

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 16 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-20 is/are pending in the application.
- 4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 6/07.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

Claim 19 is objected to because of the following informalities: The phrase "the steps of" should be deleted from this apparatus claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 4-5 and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Number 7,038,710 issued to Caviedes ("Caviedes").

For claim 1, Caviedes discloses a method for evaluating quality of a processed image, comprising the steps of: segmenting the processed image into at least one uniform region and at least one non-uniform region (col. 5 line 47 "low activity regions" are uniform regions, and "strong edges" are an example of non-uniform regions.); generating at least one artifact measure (col. 5 line 40); and generating a no-reference

quality measure from said at least one artifact measure, where said no-reference quality measure represents a quality measure of the processed image (see abstract, "an image-quality metric is predicted based on the calculated quality metrics").

Claims 19 and 20, which are apparatus and computer readable medium claims corresponding to method claim 1, are similarly rejected.

For claim 2, Caviedes discloses that said no-reference quality measure is generated directly from said processed image (abstract).

For claim 4, Caviedes discloses that generating at least one ringing artifact measure comprises: identifying at least one edge within the processed image (col. 5 line 44 detect strong edges); and defining at least one region adjacent to said at least one edge (col. 5 lines 46-62 "Detect regions adjacent to strong edges...where the local variance...is large").

For claim 5, Caviedes discloses that at least one ringing artifact measure is generated in accordance with: a ratio of the variance of a region adjacent to an edge to the variance of a uniform region, where the variance adjacent to an edge exceeds a threshold (col. 5 lines 50-53 "if the local variance for nearby pixels in a low activity region is 3, then the local variance for a ringing pixel must be at least four times that value." See also col. 5 lines 29-38).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Caviedes in view of U.S. Patent Number 6,845,180 issued to Matthews ("Matthews").

For claim 6, Caviedes discloses the elements of base claims 1, 3 and 4.

Matthews discloses that at least one region adjacent to said at least one edge is defined in accordance with a coding block size (see col. 4 lines 51-65).

It would have been obvious to one of ordinary skill in the art at the time of invention to define a region adjacent to the edge in accordance with a coding block size because ringing artifacts do not manifest across the boundaries of the blocks used in compressing the image, therefore the blocks used for measuring ringing artifacts are most conveniently the same as those used for compression as taught by Matthews at col. 4 lines 62-65.

### ***Response to Arguments***

Applicant's arguments filed July 16, 2007 have been fully considered but they are not persuasive.

I. Requirement for Information. The Examiner appreciates the references submitted by Applicant. However, the reason for the abandonment in Japan is unclear. Also, applicant has not stated whether a search and/or an Office action was done by the Japanese Patent Office in Japanese application 04-555778. Please state whether a search was performed by the Japanese Patent Office for Japanese application 04-

555778. Please state whether an Office action was mailed in the Japanese application 04-555778. Please state the reason for Japanese application 04-555778 being abandoned.

II. Requirement for Drawings. The new drawings are approved.

III. The rejection of claims 1-2, 4-6 and 19-20 is maintained. Applicant argues that the low activity region of Caviedes, which is a region having low variance, is not a uniform region. This argument is unpersuasive because a region having low variance is a uniform region. Applicant further argues that the blocking metric in Caviedes teaches away from the ringing metric. This argument is irrelevant to a rejection based on 35 U.S.C. 102. Furthermore, the blocking metric and the ringing metric are analogous.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Number 6,822,675 issued to Jung and Caviedes discloses that the "ringing artifact metric comprises a step of detecting a non-natural uniform area." A non-natural uniform area is an area where there is almost no spatial activity, which means that there is low variance. See columns 6-7 for example.

"No-Reference Metric for a Video Quality Control Loop" by Caviedes and Jung cited by applicant in the IDS states that low activity regions (uniform regions) near sharp edges (non-uniform regions) are examined for ringing artifacts. The ringing metric can be verified in a manner analogous to that of the blocking metric. See page 292.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS  
August 6, 2007



JINGGE WU  
SUPERVISORY PATENT EXAMINER